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EPA Superfund
Explanation of Significant Differences:

CROYDON TCE
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CROYDON TOWNSHIP, PA
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EXPLANATION OF SIGNIFICANT DIFFERENCES
CROYDON TCE SUPERFUND SITE
OPERABLE UNIT 2

I. INTRODUCTION

Site Name: Croydon TCE Superfund Site

Site Location: Bristol Township, Bucks County, Pennsylvania

Lead Agency: U.S. Environmental Protection Agency, Region III ("EPA" or "the Agency")

Support Agency: Pennsylvania Department of Environmental Protection ("PADEP")

Statement of Purpose

The EPA has initiated remedial action activities at the Croydon TCE Site ("the Site") under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. º 9601 et seq., commonly referred to as Superfund. The remedial action is being performed in accordance with the Record of Decision ("ROD") for operable unit 2 of the Site which was signed on June 29, 1990. This ROD addresses the containment, treatment, and discharge of a contaminated ground water plume. This Explanation of Significant Differences ("ESD") is issued in accordance with Section 117 of CERCLA, 42 U.S.C. º 9617, and the National Contingency Plan ("NCP") at 40 C.F.R. º 300.435(C)(2)(I). The NCP requires the publication of an ESD when the differences in a remedial action significantly change, but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. In this case, the discovery of a separate and distinct smaller contaminant plume resulted in significant changes to the remedy but did not fundamentally alter the remedy with respect to scope, performance, or cost. This ESD has been prepared to provide an explanation of the nature of the change made to the selected remedial action for contaminated ground water, and to demonstrate that the devised remedy complies with the statutory requirements of CERCLA º 121, 42 U.S.C. º 9621.

II. SUMMARY OF THE SITE HISTORY AND SELECTED REMEDY

The Croydon TCE Site is located in the southernmost portion of Bristol Township, Bucks County, Pennsylvania, approximately 15 miles north of Philadelphia. Elevated levels of volatile organics, primarily trichloroethene ("TCE"), are present in ground water and surface water; however all of the sources have not been determined. The site, approximately 3.5 square miles in total area, is bordered by Interstate 95 to the north, the Delaware River to the south, Route 413 to the east, and Neshaminy reek to the west. The site is quite large because the source and extent of ground water contamination was unknown, and widespread ground water contamination was observed throughout this portion of Bucks County. The Phase I Remedial Investigation ("RI"), conducted in 1988, assessed the entire site.

Within the site boundaries is a smaller area on which the Phase I and II RIs were primarily focused. This area is referred to as the "focused area of investigation" and encompass the area east of Mary Devine Elementary School, west of Route 413, and North of River Road to just north of U.S. Route 13. The focused area of investigation was studied extensively for the following:

- Ground water in this area was known to be contaminated with volatile organic compounds, primarily elevated levels of TCE.
- Previous studies in the local area provided data which indicated that the sources of the TCE-contaminated ground water might be located within this area.
- Analysis of historical aerial photographs identified 11

potential source areas within the focused area of investigation.

The focused area of investigation includes a portion of the Croydon residential community and an area where several small to large-scale manufacturing and commercial establishments are located. Most of the commercial establishments are located along State Road and U.S. Route 13; the large manufacturing facilities are located between these two roads in the southeast portion of the focused area of investigation.

The area outside of the focused area of investigation is mainly residential communities, constructed from the 1940s to 1960s. These communities include Croydon, Croydon Heights, Croydon Acres, Maple Shade, West Bristol, Belardly, and Rockdale.

The site is located in the Delaware River Basin. On a regional and local basis, the Delaware River is the local discharge point for both ground water and surface water. Portions of the study area which are near to Neshaminy Creek and the Delaware River are within the boundary of the 100-year FLOODPLAIN. However, the focused area of investigation is not within this boundary.

Hog Run Creek and its tributaries are located within the site boundaries. The tributaries emanate in the area between State Road and River Road and form Hog Run Creek just north of River Road. Hog Run Creek then flows southward and discharges into the Delaware River.

An industrial landfill owned by Rohm & Haas is located south of River Road. This landfill which was operated from 1952 to 1975, is being studied by Rohm & Haas under a Resources Conservation and Recovery Act (RCRA) corrective action order. Based on the findings contained within the Phase I RI, the landfill has been ruled out as the source of the TCE contamination in the Croydon community.

The ROD for operable unit 2 is part of the available administrative record and describes in detail conditions and contamination requiring remedial action. The site was identified by EPA after several investigations of the Rohm & Haas Site in Bristol Township. Since 1983, Rohm & Haas conducted studies and prepared various reports concerning its Bristol Township property, including the Vicinity of River Road, Bristol Township, PA dated March 1986, concluded that the primary TCE plume of concern in the ROD was emanating north of and not from the Rohm & Haas property. EPA reviewed the report and eventually concurred with this conclusion (ROD, pg. 6).

EPA was uncertain whether many of the businesses in the area used products containing TCE, because of this EPA determined that a separate Remedial Investigation/Feasibility Study ("RI/FS") was necessary. Although numerous studies were conducted, including both a Phase I RI and a Phase II RI, in order to locate the source(s) of TCE ground water contamination, no source could be positively confirmed. In addition, EPA conducted a thorough investigation to identify and locate possible Potential Responsible Parties ("PRPs"), as well as gather any information regarding the contamination at the Site.

Based on the Phase I RI, and as outlined in the ROD for operable unit 1 dated December 1988, EPA provided public water to residents affected. The objective of the selected remedy for the operable unit 2 ROD was to contain further migration of the primary TCE plume of concern while attempting to reduce ground water contaminant levels.

The selected remedy for operable unit 2 included the following major components:

- Construction and long-term operation of pumping/extraction wells located in positions to adequately contain the migration of the contaminant plume.

- Treatment of extracted ground water via air stripping, followed by carbon adsorption as an ancillary treatment step.

- Onsite discharge of the treated ground water to the East Branch of Hog Run Creek.

- Ground water sampling conducted outside of the TCE plume area to monitor the possible advancement of ground water contaminants. Wells sampled and analyzed for TCE, tetrachloroethane, vinyl chloride, 1,1,1,-trichloroethene, 1,1,-dichloroethane, and 1,1-dichloroethene.

III DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

EPA has determined that a charge in the remedy, resulting in a significant difference from the original remedy selected in the ROD for operable unit 2, is warranted. The information gathered

during the remedial design process supports the need for a change in the selected remedy.

This significant difference exists in the areal extent and source area (s) of the "TCE Plume" as identified in the ROD. Extensive ground water sampling, during the remedial design, revealed the presence of ammonium sulfate as well as other contaminants in the portion of the "TCE Plume" near the Rohm & Haas facility (see attached figure). In March 1993, a thorough water data was conducted by an EPA Hydrogeologist. This review included the Phase I RI Report dated August 1988, the Phase II RI Report dated January 1990, remedial design ground water data, and a collection of various ground water data gathered by Rohm & Haas over several years. The resulting conclusion of this review was that the "TCE plume" is actually two distinct and separate contaminate plumes. The pre-ROD hydrogeologic investigations alone did not uncover this fact. These two plumes, as shown on the attached figure, are the main TCE plume or Plume A (located west of Hog Run Creek). As the figure demonstrates, these two plumes flow in the opposite directions and based on information gathered to date, EPA has concluded that they result from different sources.

Plume A is migrating eastward toward Hog Creek. This plume is primarily discharging to the creek. The exact source area for Plume A is unknown and may include many small source areas from either facility spills or uncontrolled dumping. Although hydrogeological ground water information indicates that the source (s) of Plume A appear to have been located to the west of Hog Run Creek, no sources were positively confirmed.

The smaller Plume B is migrating from the Rohm & Haas Manufacturing Area westward toward Hog Run Creek. The shallow portion of this plume will also discharge to Hog Run Creek. The source area for Plume B is located on the Rohm & Haas Manufacturing Area east of Hog Run Creek. The determination of this source area is based on known ground water flow directions.

EPA has determined that this smaller Plume B contains a different contaminant mix, primarily ammonium sulfate, and emanates from a separate source (the Rohm & Haas Manufacturing Area) than the contamination of the primary Plume A. Therefore, EPA has concluded that these are two separate and distinct plumes that flow in opposite directions. EPA has determinated that Plume B should not be addressed as part of the remedial action for the Croydon TCE Superfund Site. However, Plume B has been considered and will be addressed under the jurisdiction of EPA's RCRA Authority for which a case file already exists.

Because the main TCE plume, or Plume A, is a distinct and separate contaminant plume , the original remedy selected for operable unit 2 is revised only insofar as it will no longer be applicable to the area east of Hog Run Creek (i.e. Plume B). In all other significant respects the original remedy selected in the ROD will be implemented at the main TCE plume, or Plume A. Additionally, Plume B will be addressed under RCRA, which is consistent with EPS's practice to coordinate between RCRA, and CERCLA Site activities (memorandum of Steven A. Herman, September 24, 1996). Accordingly, the change to the remedy is significant, but not fundamental as to scope, performance or cost.

PUBLIC PARTICIPATION

The ESD and the information upon which it is based will be included in the Administrative Record file and the information repository for this Site. The Administrative Record is available for public review at the locations listed below:

U.S. EPA Region III
841 Chestnut Building
Philadelphia, PA 19107
Hours: Monday - Friday, 9:00 a.m. - 4:30 p.m.
Contact: Anna Butch
(215) 566-2077

Margaret R. Grundy Memorial Library
680 Radcliffe Street
Bristol, Pennsylvania 19007

Contact: Mary Jane Mannherz
(215) 788-7891

VII SUPPORT AGENCY COMMENTS

EPA has notified PADEP of the changes proposed in this ESD in accordance with 40 C.F.R. º 300.4435(c)(2). By letter dated December 20, 1996, PADEP informed EPA that it concurs with this ESD.

VIII. AFFIRMATION OF THE STATUTORY DETERMINATIONS

EPA has determined that the revised remedy complies with the statutory requirements of CERCLA º 121, 42. U.S.C. º 9621. Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA and PADEP believe that in spite of the significant difference between the two remedies, the current selected remedy remains protective of human health and the environment, and complies with Section 121 (d) of CERCLA, 42 U.S.C. º 9621 (d) and EPA's off-Site Policy and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

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